



VaxCyne

***Immunotherapeutic Vaccine Technology
Targets Cancer Biomarkers***

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VaxCyne

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VaxCyne

Cynvec is an Oncology-focused Biotechnology Company

Cynvec was founded through a cancer research funding agreement with New York University and Dr. Daniel Meruelo in 2004

- Fund the basic research on Sindbis virus vector technology in the treatment of cancer
- Worldwide, exclusive license to NYU technology
- Strong and deep IP portfolio

Development Milestones

- Derived proprietary, patent protected sindbis vector platform - CYN 101
- Established GMP production process and analytics
- Completed pharmacology, biodistribution, and short-term toxicology
- Pre-IND meeting with U.S. FDA in June 2009
- Discovered and patented the immunotherapeutic vaccine mechanism of action of sindbis vectors using cancer biomarkers
- Renamed the immunotherapeutic vaccine platform – VaxCyne

Developing VaxCyne to Target Cancer Biomarkers NY-EOS-1 and CEA

- Ovarian, Lung, Colorectal, Breast, Gastric Cancers

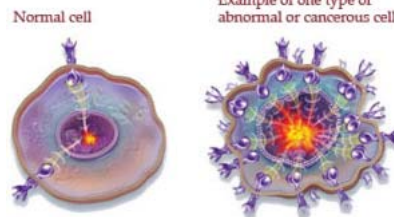
VaxCyne

VaxCyne is Engineered to Produce Tumor Biomarkers (TAAs) When Injected for Immunotherapeutic Vaccination

Differences Between Normal and Cancer Cells are Biomarkers:

- Tumor Associated Antigens
- Targets for Immunotherapy

*National Cancer Institute
Prioritization of Cancer Antigens:
Biomarkers of Medical Importance
for Cancer Therapy**

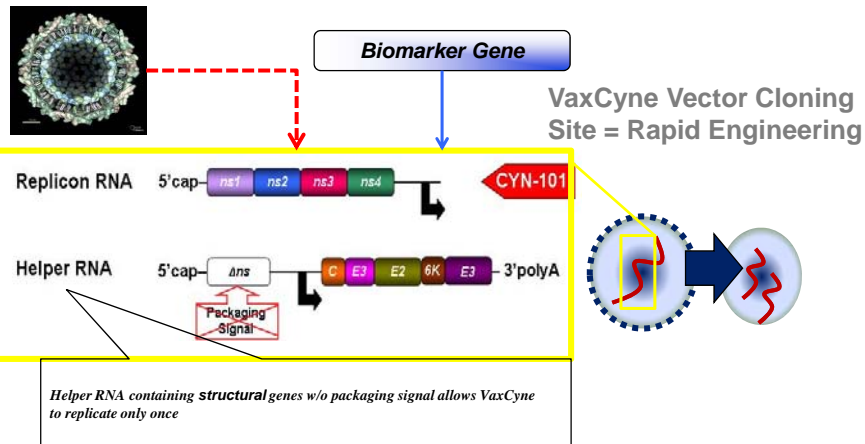


*Clin Cancer Res 2009;15(17) September 1, 2009

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VaxCyne is a Platform for Product Development

VaxCyne Vectors are Derived from CYN101 Sindbis Viral Vector*



*CYN101 Contains No Biomarker

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NY-ESO-1 and CEA are High Priority Cancer Biomarkers: NCI*

Overexpressed in Numerous Cancers:

- Ovarian
- Breast
- Thyroid
- Lung
- Gastric
- Pancreatic
- Melanoma
- Colorectal

Differentiation Between Normal and Cancer Cells:

- Oncofetal Protein Not Expressed in Normal Adult Tissues

Poor Auto-Antibody Response:

- Activation of NK and T-Cells Needed for Effective Immune response

Combination with Chemotherapy – Immune Checkpoint Inhibitors:

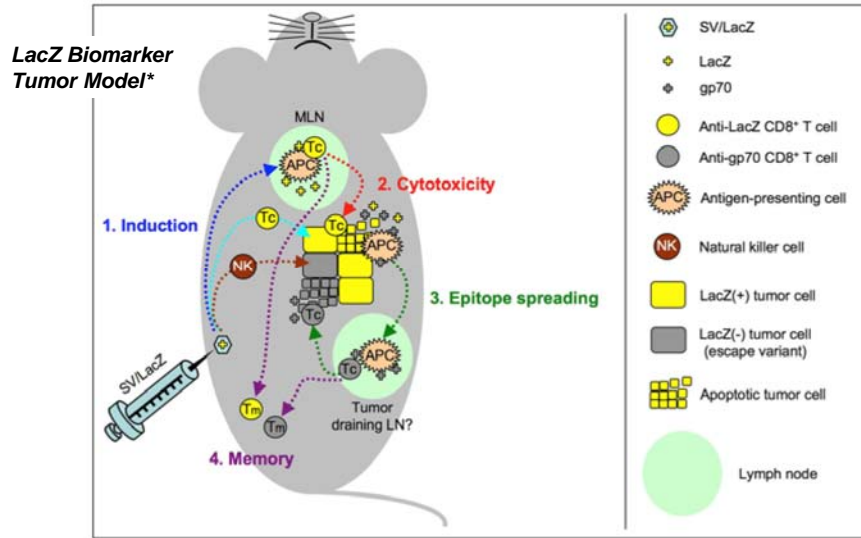
- PD-1 Inhibitors**

*Cheever et al. Clin Cancer Res 2009; 15:5323-5337

**Matsuzaki et al. www.pnas.org/cgi/doi/10.1073/pnas.1003345107

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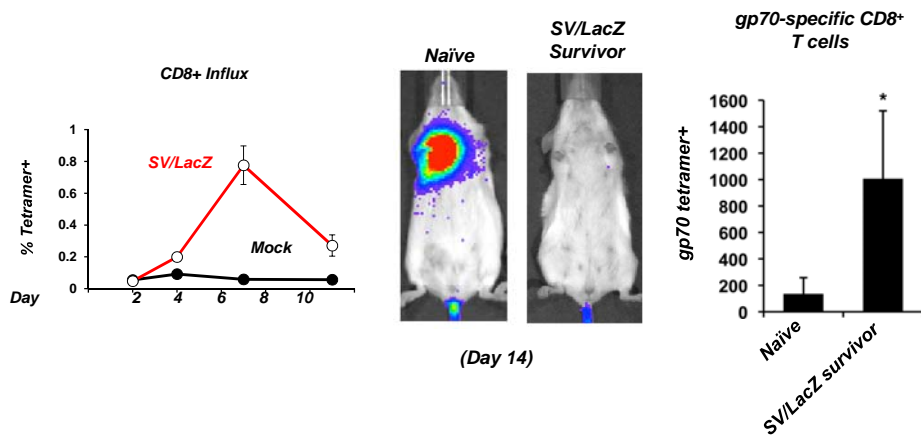
How VaxCyne Works: Immune System Activation Against Tumor Biomarkers



*Granot T, Yamanashi Y, Meruelo D. *Molecular Therapy* 2013

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Surviving Mice are Resistant to Tumors and Have Immunity Against Tumor Biomarkers



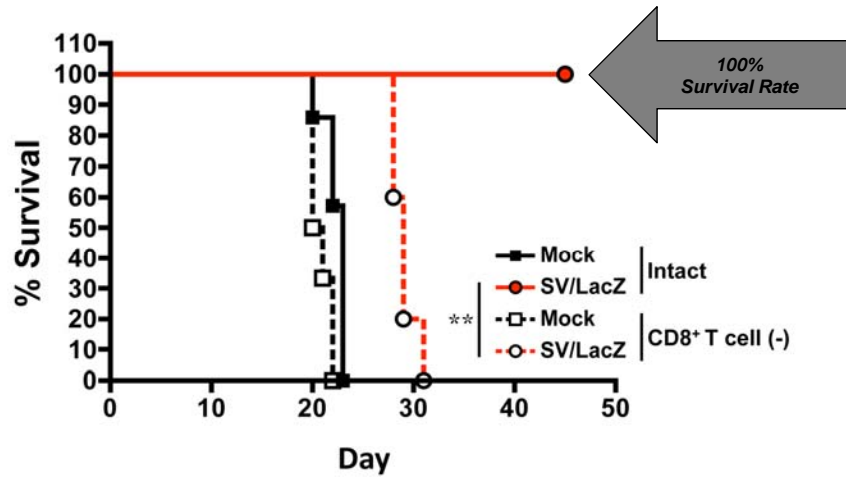
Sindbis/LacZ-cured Mice Reject WT Tumor Cells and Have Memory CD8⁺ T Cells Against an Endogenous CT26 Tumor Associated Antigen (gp70)

Granot T, Yamanashi Y, Meruelo D. *Molecular Therapy* 2013

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**VaxCyne Technology Proof-of-Concept:
LacZ-specific CD8+ T cells Target and Destroy LacZ+ Tumor Cells**

VaxCyne Immunotherapy with Tumor Biomarker Leads to 100% Survival



Granot T, Yamanashi Y, Meruelo D. *Molecular Therapy* 2013

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FDA Reviewed Pre-Clinical & CMC

Rapid Path to IND for VaxCyne in Ovarian Cancer

CYN101 Biodistribution

- Tumors Not Normal Cells
- Lymph Nodes & Spleen

CYN101 Toxicology

- No Detectable Toxicity
- Acute
- 4-Week

CYN101 Pharmacology

- Tumor Reduction & Survival
- Induces NK and T-Cell Response
- Activates Epitope Spreading
- Synergistic with Chemotherapy

High-Yield GMP Vector

Manufacturing & Purification

- Scalable In-Vitro Transfection Process
- Scalable Mammalian Cell Factory System
- Scalable Single-Column Purification

GLP Assays for Lot Release

- Titer/Quantification
- Potency/Biomarker Production
- Stability to 1 Year

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Phase I Study of VaxCyne in Ovarian Cancer: Evaluation of Safety and Immune Response



*TITLE: Phase I dose-escalation study of VaxCyne
as intraperitoneal (IP) or intravenous (IV)
immunotherapeutic consolidation in women with ovarian cancer*

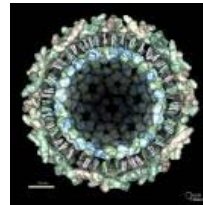
*Principal Investigator: Franco Muggia
Co-Principal Investigator: Mark Einstein*

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VaxCyne Activates the Immune System Against Cancer Biomarkers

*Viral Vector Platform Enables Rapid Product Development
Viral Antigens Enhance Immune Response Against Inserted Biomarkers*

- **Easily Engineered to Produce Tumor Associated Antigens:**
 - Proteins
 - Peptides
 - RNA
- **Activates Multi-cellular Immune Response**
 - NK
 - CD-8 & CD-4 Lymphocytic T-Cells
 - Memory T-Cells
- **VaxCyne Treats Tumors And Prevents Recurrence**
 - VaxCyne with Tumor Biomarker Activates Immune System
 - Immune Cells Attack Tumor Cells Containing Viral and Biomarker Tumor Antigens (Vector Infects Cancer Cells That Over-Express Laminin Receptor)
- **Excellent Preclinical Results**
 - Tumor Eradication
 - No Detectable Toxicity
 - Survival
 - Biodistribution Profile Demonstrates Mechanism
 - Immunity Against Cancer Recurrence



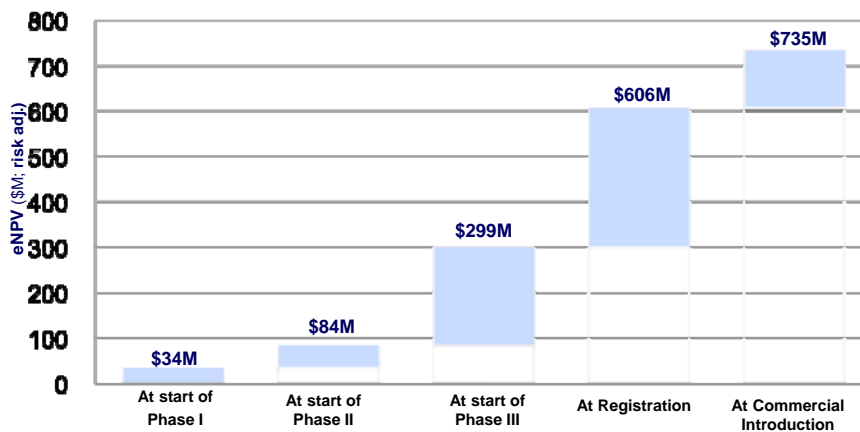
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Cynvec is Raising Capital for the Clinical Development of VaxCyne for Cancer Immunotherapy

<u>Cumulative Investment</u>	<u>Valuation Triggers</u>	<u>Months from Financing</u>
\$2.5 MM	VaxCyne Preclinical	12
\$5 MM	VaxCyne Phase I Safety	24
\$10 MM	VaxCyne Phase I/II Preliminary Efficacy	42

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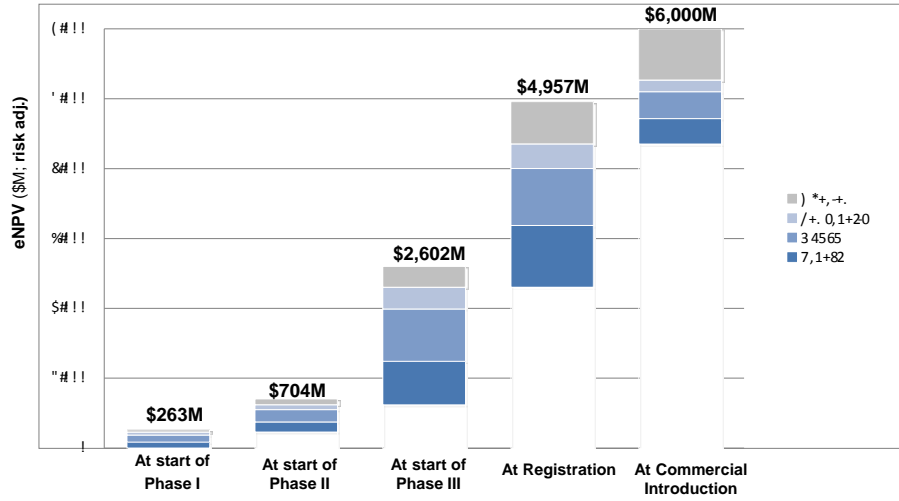
A Single Ovarian Cancer Indication for VaxCyne Establishes Baseline Valuation for Cynvec



eNPV Model Developed by The Frankel Group - 2009

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VaxCyne Valuation Potential in Cancers Expressing NY-EOS-1 and CEA



eNPV Model Developed by The Frankel Group - 2009

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